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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,416	02/20/2001	Kiwamu Tanahashi	11995/2	1923

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EXAMINER

UHLIR, NIKOLAS J

ART UNIT PAPER NUMBER

1773

DATE MAILED: 12/24/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/785,416

Applicant(s)

TANAHASHI ET AL.

Examiner

Nikolas J. Uhler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 11-12 are noted to require a nominal apparatus. At this time restriction has not been required between the product claims 1-10 and the apparatus claims 11-12 because the apparatus claims do not recite any significant limitations, and therefore are considered as part of the product claims. If the apparatus claims are amended to contain significant limitations they will be subject to restriction based on original presentation.

Specification

2. The abstract of the disclosure is objected to because it is more than one paragraph. Correction is required. See MPEP § 608.01(b).

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 3-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanbe et al. (JP11-306532).

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6. For the purpose of this examination, the examiner has relied upon US Patent #6221508 as an English equivalent to the Japanese document. All of the citations below refer to the English patent, unless otherwise specifically noted.

7. Regarding the limitations of claim 1, wherein the applicant requires a perpendicular magnetic recording medium, comprising: a non-magnetic amorphous metal layer containing Ni formed on the substrate; and a perpendicular magnetic recording layer formed on the non-magnetic amorphous metal layer containing Ni.

8. For the purpose of this examination, the examiner has interpreted the phrase "formed on" in claim 1 to be open language, thus allowing other layers to be present between the required layers.

9. With respect to these limitations, Kanbe et al. teaches a magnetic recording medium comprising a substrate, a first underlayer, a second underlayer, and a magnetic layer, formed on the substrate in that order (column 7, lines 24-35). The first underlayer is an amorphous microcrystalline film that contains Ni as its main component (column 3, lines 49-57). In a particular embodiment, Kanbe et al. teaches a magnetic recording medium wherein the 1st underlayer comprises a NiTa_{40} alloy into which 16 mols of ZrO_2 have been incorporated. Further, in another embodiment, Kanbe et al. teaches a first underlayer comprising an alloy of $\text{NiNb}_{40}\text{Zr}_{12}$ (columns 12-13 embodiment 5). Thus, all of the limitations of claim 1 are met.

10. Regarding the limitations of claims 3 and 4, wherein the applicant requires the non-magnetic amorphous Ni layer also contains Zr (claim 3) and one of Ta and Nb (claim 4). These limitations are met as set forth above for claim 1.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanbe et al. as applied to claim 1 above, and further in view of Honda et al. (US5851643).

13. Kanbe et al. does not teach a soft magnetic layer between the substrate and a non-magnetic amorphous metal layer, as required by claim 2.

14. However, Honda et al. teaches a magnetic recording medium that comprises a substrate, one or more underlayers, and a magnetic layer, and teaches that if a soft magnetic underlayer is formed between the substrate and the first magnetic layer, a magnetic recording medium having low noise and high read back output can be produced. Suitable soft magnetic materials include Sendust, Permalloy, and amorphous alloys of Fe, Co, Zr, Mo, Nb and W (column 23, lines 50-67).

15. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to utilize a soft magnetic underlayer as taught by Honda et al. between the substrate and the first underlayer taught by Kanbe et al.

16. One would have been motivated to make this modification due to the teaching in Honda et al. that the read back output and noise of a magnetic recording medium can be improved by utilizing a soft magnetic underlayer between the substrate and the 1st underlayer of a magnetic recording medium.

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17. Claims 5-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Kanbe et al. as modified by Honda et al. as applied to claim 2 above, and further in view of Shimizu et al. (US2002/0012816A1).

18. Kanbe et al. as modified by Honda et al. does not teach a soft magnetic underlayer having ferromagnetic nanocrystals, as required by claim 5, the nanocrystal contrast required by claim 6, the x-ray diffraction properties required by claim 7, the diffraction rings of claim 8, and the compositions required by claim 9 and 10.

19. However, Shimizu et al. teaches a magnetic recording medium that comprises a substrate, one or more underlayers and a magnetic layer, wherein a soft magnetic layer is formed between the substrate and the 1st underlayer (page 4, sections 78-79 and figure 2). Suitable soft magnetic materials include Permalloy, Sendust, and FeTaC (page 4, section 79).

20. Therefore it would have been obvious to one with ordinary skill in the art to utilize FeTaC as the soft magnetic layer taught by Kanbe et al. as modified by Honda et al., as FeTaC is recognized in the art to be equivalent to Sendust or Permalloy as a suitable soft magnetic material for forming a layer between the substrate and a 1st underlayer of a magnetic recording medium

21. Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In Re Fount* 213 USPQ 532 (CCPA 1982); *In Re Siebentritt* 152 USPQ 618 (CCPA 1967); *Grover Tank & Mfg. Co. Inc V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950)

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22. It is the examiners position that the limitations of claims 5-10 are met when FeTaC is utilized as the soft magnetic material, as FeTaC is specified in the instant specification as a material that possesses the requirements of claims 5-8, and meets the compositional requirements of claims 9 and 10. Thus, these limitations are met.

23. It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily on inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433.

24. Regarding the limitations of claims 11-12, wherein the applicant requires a magnetic recording apparatus comprising: a perpendicular recording medium having a soft magnetic underlayer (claim 11), specifically a soft magnetic underlayer having α -Fe nanocrystals (claim 12), a non-magnetic amorphous intermediate layer containing Ni, Ta, and Zr, which is formed on the soft magnetic layer, and a perpendicular recording

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layer formed on the non-magnetic amorphous intermediate layer containing Ni; a driver for driving the magnetic medium in a recording direction; a magnetic head consisting of a recording section and a reproducing section; means for allowing the magnetic head to have a relative movement for said perpendicular magnetic recording medium; and recording-reproduction processing means for performing signal input to said magnetic head and reproduction of output signal from the magnetic head, wherein said magnetic head reproduction section is constituted of a high sensitive layer utilizing any one of a magnetoresistive effect and a tunneling magnetoresistive effect.

25. Regarding these limitations, Kanbe et al. teaches a recording system utilizing a magnetoresistive head on column 6, lines 20-40. Thus, the examiner takes the position that the limitations of claims 11-12 are met.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhler whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

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December 13, 2002


STEVAN A. RESAN
PRIMARY EXAMINER